PE TITLE: Threat Simulator Development

	RDT&E BUDGET ITEM J	USTIFIC	ATION	SHEET	(R-2 E)	chibit)		DATE	DATE February 2000		
	ACTIVITY anagement and Support			PE NUMBER AND TITLE 0604256F Threat Simulator Develope							
	COST (\$ in Thousands)	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost		
	Total Program Element (PE) Cost	32,054	31,672	34,785	37,990	39,993	42,673	43,516	Continuing	TBD	
662907	Electronic Combat Intel Support	1,886	1,708	1,968	1,882	1,913	2,033	2,053	Continuing	TBD	
663321	Electronic Warfare Ground Test Resources	30,168	27,610	26,687	29,078	30,893	33,333	33,964	Continuing	TBD	
667500	Foreign Material Acquisition/Exploitation	0	2,354	6,130	7,030	7,187	7,307	7,499	Continuing	TBD	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

(U) A. Mission Description

This PE provides funding for the elements necessary to support the AF Electronic Warfare (EW) Test Process. This test process provides a scientific methodology to ensure the effective disciplined and efficient testing of AF EW and avionics systems. Each capability or facility improvement is pursued in concert with the others so as to avoid duplicate capabilities while at the same time producing the proper mix of test resources needed to support the AF EW Test Process. This PE provides funding for the management and technical oversight of implementation activities, the Air Force-led tri-Service effort to establish a common modeling and simulation architecture, development and improvement of digital EW models, measurement facilities operation and improvements, hardware in the loop test facilities operation and improvements, installed system test facility improvements, and development and improvement of open air threat simulators for flight testing. This PE also provides funding for planning, management, budgetary, and technical support to the Air Force for corporate-level implementation of the Electronic Warfare (EW) Test Process and for improvement and modernization (I&M) and application of the test and evaluation (T&E) infrastructure. Support includes requirements definition and analysis, project planning, programming and budgeting, technical oversight, and application of T&E facility I&M. Products include studies, analyses, and related documentation. This PE provides funding to support the acquisition and exploitation efforts of the Foreign Materiel Program, as well as to support EW intelligence efforts, beginning in FY 00.

(U) B. Budget Activity Justification

This Program Element is in Budget Activity 6, Management Support, because it is a Research and Development (R&D) effort for Improvement and Modernization of T&E capabilities at Air Force Test Centers.

Page 1 of 11 Pages

Exhibit R-2 (PE 0604256F)

	RDT&E BUDGET ITEM JUSTIFI	RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDO	GET ACTIVITY	PE NUMBER AND TITLE		i ebiu	ary 2000						
06 -	Management and Support	0604256F Threat Si	mulator Deve	lopment							
(U)	C. Program Change Summary (\$ in Thousands)										
` /		FY 1999	FY 2000	FY 2001	Total Cost						
(U)	Previous President's Budget (FY 2000 PBR)	34,086	32,391	36,848							
(U)	Appropriated Value	34,582	32,391								
(U)	Adjustments to Appropriated Value										
` /	a. Congressional/General Reductions	-496	-29								
	b. Small Business Innovative Research	-679									
	c. Omnibus or Other Above Threshold Reprogram	-300	-485								
	d. Below Threshold Reprogram	-873									
	e. Rescissions	-180	-205								
	f. Other										
(U)	Adjustments to Budget Years Since FY 2000 PBR			-2,063							
(U)	Current Budget Submit/FY 2001 PBR	32,054	31,672	34,785	TBD						
		22,02	21,072	0.,700	122						
(U)	Significant Program Changes:										
		Page 2 of 11 Pages		Exhibit R-2	(PE 0604256F)						

RDT&E BUDGET ITEM .	JUSTIFIC	ATION :	SHEET	(R-2A E	xhibit)		DATE		ry 2000
BUDGET ACTIVITY 06 - Management and Support		PE NUMBER AND TITLE 0604256F Threat Simulator Developr				lopment		PROJECT 662907	
COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
662907 Electronic Combat Intel Support	1,886	1,708	1,968	1,882	1,913	2,033	2,053	Continuing	TBD

(U) A. Mission Description

This project provides funding to support Foreign Materiel Operational Test and Evaluation (FMOT&E), which ensures the ability of operational commands to test and develop effective Electronic Attack/Electronic Protection (EA/EP) techniques and tactics. Funds are required for: deployment of blue systems to test facilities, travel for personnel to the test sites to evaluate and validate test results real-time, range and laboratory costs; costs for instrumentation of blue systems; contracted engineering support for the conduct of tests and subsequent reporting. Funding for this program is required to prevent future aircraft losses due to improper and inaccurate aircrew tactics (e.g., lack of evasive action or proper tactics training to avoid missile attack).

(U) FY 1999 (\$ in Thousands)

(U) \$1,571 Funded fighter and bomber testing for foreign material operational exploitation. Extensive evaluations and reports were accomplished.

(U) \$236 Funded transport aircraft for foreign material operational exploitation. Extensive evaluations and reports were accomplished.

(U) \$79 Funded classified operational assessments for foreign material operational exploitation. Extensive evaluations and reports were accomplished.

(U) \$1,886 Total

(U) FY 2000 (\$ in Thousands)

(U) \$1,372 Funds fighter and bomber testing for foreign material operational exploitation. Extensive evaluations and reporting to be accomplished.

(U) \$281 Funds transport aircraft for foreign material operational exploitation. Extensive evaluations and reporting to be accomplished.

(U) \$55 Funds classified operational assessments for foreign material operational exploitation. Extensive evaluations and reporting to be accomplished.

(U) \$1,708 Total

(U) FY 2001 (\$ in Thousands)

(U) \$1,553 Funds fighter and bomber testing for foreign material operational exploitation. Extensive evaluations and reporting to be accomplished.

(U) \$344 Funds transport aircraft for foreign material operational exploitation. Extensive evaluations and reporting to be accomplished.

(U) \$71 Funds classified operational assessments for foreign material operational exploitation. Extensive evaluations and reporting to be accomplished.

(U) \$1,968 Total

(U) B. Project Change Summary

None

Project 662907 Page 3 of 11 Pages Exhibit R-2A (PE 0604256F)

	RDT&E BUD	GET ITEN	/ JUSTIF	ICATION			chibit)		DATE Fe	bruary	/ 2000	
	GET ACTIVITY - Management and Supp	oort			PE NUMBER 0604256		Simulator				PROJECT 662907	
(U) (U) (U)	C. Other Program Funding State AF RDT&E Other APPN None	ummary (\$ in 7 FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	_	st to plete	To	otal Cost
(U)	D. Acquisition Strategy Not applicable.											
(U) (U)	E. Schedule Profile Not applicable. Discrete tasks opportunities for operational un					3 4	1 2	2000 3 all budget is	4 1 based on sup	2	2001 3 p to eigh	4 t
	Project 662907			Pag	e 4 of 11 Page	S			Exhibit	R-2A (P	E 06042	256F)

RDT&E BUDGET ITEM JU	ISTIFIC	ATION S	SHEET ((R-2A E	xhibit)		DATE	Februa	ry 2000
BUDGET ACTIVITY 06 - Management and Support		PE NUMBER AND TITLE 0604256F Threat Simulator Developm						PROJECT 663321	
COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
663321 Electronic Warfare Ground Test Resources	30,168	27,610	26,687	29,078	30,893	33,333	33,964	Continuing	TBD

(U) A. Mission Description

The AF requires a comprehensive set of test facilities to implement the Air Force Electronic Warfare (EW) Test Process. To manage program risk effectively throughout the weapon system acquisition process, and conduct test and evaluation (T&E) effectively and efficiently, a spectrum of T&E capabilities from modeling and simulation through open-air ranges is required. The EW Test Process Support task provides for investment management, coordinated technical oversight, and application of EW T&E facilities, including studies, analyses, and related documentation. The Joint Modeling and Simulation System (JMASS) is an Air Force-led, tri-service project to establish a common, DoD-wide, digital simulation architecture and set of models in support of T&E. FY00 funding for the JMASS architecture and software development transitioned to PE 27601F. Prior to FY00, the EW T&E Modeling & Simulations (M&S) program provided funds to support Missile and Space Intelligence (MSIC) and National Air Inteligence Center (NAIC) in the development of Electronic Combat (EC) capable threat engagement models using the JMASS architecture. From FY00 and beyond, JMASS model development funds will be programmed under other Program Elements. The EW T&E M&S program will lead correlation, verification and validation activities of integrated simulations of validated models across the EW test facilities using the Silver Bullet measurement capability. The National RCS Test Facility - NRTS (formerly Radar Target Scatter (RATSCAT)) upgrade project provides improvements to the NRTS at Holloman AFB, NM, to support radar cross section (RCS) measurement requirements of DoD customers, with either conventional or stealth systems. The Air Force Electronic Warfare Evaluation Simulator (AFEWES) and the Digital Integrated Air Defense System (DIADS), provide the ability to realistically evaluate hardware components and simulated weapon systems against manned hardware threat representations throughout the acquisition process. AFEWES provides simulations of advanced Infrared (IR) & Radio Frequency (RF) Surface-to-Air Missiles (SAMs) and Air-to-Air Missiles (AAMs), IR/ Ultra-violet (UV) & RF missile warning, end-to-end testing of the missile warning/IR Countermeasure function; integration of actual threat hardware and ground clutter into advanced threat RF and IR missile simulations. DIADS provides algorithm based enemy command and control (C2) capabilities plus early warning radar detection and limited ground control intercept features and also allows man-in-the-loop interaction for the enemy C2 positions. The Electronic Combat Integrated Test (ECIT) project upgrades the AF Hardware-in-the-Loop (HITL), System Integration Labs (SIL), and Installed System Test Facility (ISTF) at Edwards AFB, CA. The HITL and SILs at Edwards allow for the stimulation of real aircraft avionics with the benefit of a laboratory environment. The AF ISTF consists of a large, instrumented, anechoic chamber which provides for evaluation of EW systems when installed on its host aircraft, both prior to and throughout the flight test program. The goal of the ECIT upgrade is to integrate coherent EW threat stimulators into the ground test facilities at Edwards and modernize instrumentation/test operation capabilities. In FY 99 ECIT began a 3-year effort to fund the purchase of EW equipment in support of the F-22's Integrated Hardware-In-The-Loop Avionics Test (IHAT) capability. The IHAT capability is being transferred to Edwards AFB, CA from Marietta, GA. In FY 00, the Air Warfare Mission Simulator (AWMS) program will provide the electronic warfare capability into the high fidelity reconfigurable cockpits being developed under PE64759. This program will also provide the capability to link the high fidelity cockpits into the information battlespace via High Level Architecture (HLA).

Project 663321 Page 5 of 11 Pages Exhibit R-2A (PE 0604256F)

	RDT	&E BUDGET ITEM JUST	IFICATION SHEET (R-2A Exhibit)	DATE February 2	2000
	GET ACTIVITY - Management	and Support	PE NUMBER AND TITLE 0604256F Threat Simulator	Development	PROJECT 663321
(U)	A. Mission Descr	ription Continued			
(U) (U)	FY 1999 (\$ in The \$527	EW Test Process Support. Conducte	ed requirements analyses and other studies in support of Air digital modeling and simulation (M&S) in support of the EV		structure.
(U)	\$7,500	JMASS. Established the JMASS Joi compatibility with the DoD High-Lo development and integration of JMA Modeling and Simulation (EW T&B required by the B-1B DSUP custom environment model, completed development and integrated single validation process for integrated single compatibility.	int Program Office (JPO). Initiated development of joint ve evel Architecture (HLA). Completed transition of JMASS t ASS-compliant threat models to support the needs of various E M&S) completed funding the intelligence agencies to dev her to support the EW Test Process. Specifically the intel ag elopment of the Surface-to-Air Digital Simulator (SADS) 2c el, and the JMASS program office established a JMASS libra mulations configured to support development and operationa ween EW test facilities being supported by Silver Bullet.	ersion of the JMASS software, which to PCs and UNIX computer platform is DoD customers. The EW Test and welop JMASS compliant, digital threat gencies completed development of the c/e, finished development of an Air I tary. Began development of verificate	ns. Continued Evaluation at models the JMASS RF Intercept / tion and
(U)	\$1,774	RATSCAT Upgrades. Achieved Ini	itial Operaional Capability (IOC) of BICOMS Mobile Radar AMS) Radar Replacement. Began development on improve	_	ATSCAT
(U)	\$2,486	AFEWES Operation. Continued AF	FEWES operation in support of Air Force, Army, Navy, and AM-C1 and SAM-E) simulations, and began development o	I non-DoD test customers. Continued	
(U)	\$6,097	DIADS. Provided mission level sin	nulation for evaluating the survivability of aircraft penetrating DIADS baseline. Began development of external linking a	ng an enemy air defense system. Beg	egan
(U)	\$11,784	ECIT. Continued Infrastructure and CTEIP-funded Generic Radar Targ (CNI) simulator, to support F-22 and and Controls portion of the I&TGC	d Generic Test Capability (I>C), which provides RF simplest Generator (GRTG), Infrared Sensor Simulator (IRSS), and other advanced weapon systems requirements. Complete effort. Began initial planning and purchase of EW equipment (IHAT) capability at Edwards AFB.	nd Communications-Navigation-Iden ed development and acceptance of the	ntification e Network
(U)	\$30,168	Total			
Р	Project 663321		Page 6 of 11 Pages	Exhibit R-2A (PE	0604256F)

	RDT&	E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 2000						
	GET ACTIVITY	PE NUMBER AND TITLE	PROJECT						
<u>06 -</u>	Management a	nd Support 0604256F Threat Simulator Develop	ment 663321						
(U)	A. Mission Descript	ion Continued							
(U) (U)	FY 2000 (\$ in Thous \$896	EC Test Process Support. Conduct requirements analyses and other studies in support of Air Force investments analyses are systems engineering/technical assistance (SETA) support for Air Force implementation of the EW							
(U)	\$3,947	and modernization (I&M) of the EW test infrastructure. EW Test and Evaluation Modeling and Simulation (EW T&E M&S). Continue development of verification simulations configured to support development and operational testing. Continue correlation process developmentation between EW test facilities being supported by Silver Bullet. Begin study of requirements to from the EC environment into cockpit simulators in support of the Air Warfare Mission Simulator (AWMS).	opment and correlation o migrate realistic sensor information						
(U)	\$1,959	NRTF Upgrades. Complete development on RAMS Pylon. Complete industry partnership efforts with firs							
(U)	\$5,872	AFEWES. Continue AFEWES operation in support of Air Force, Army, Navy, and non-DoD test customer upgrades to the IR laboratory. Complete development of Advance Simulator Modifications (SAM-C2), an semi-active SAM simulations (SAM-D).	s to include defining requirements for						
(U)	\$2,772	DIADS. Continue providing mission level simulation for evaluating the survivability of aircraft penetrating Continue verification and validation efforts required for achieving IOC of DIADS baseline. Continue development IADS capabilities, in support of AF, Army, Navy, and non-DoD test customers. Begin support of m scenario generation and execution.	lopment of external linking and						
(U)	\$12,164	ECIT. Complete IOC of Infrastructure and Generic Test Capability (I>C), which provides RF simulatio the CTEIP-funded Generic Radar Target Generator (GRTG), Infrared Sensor Simulator (IRSS), and Comm (CNI) simulator, to support F-22 and other advanced weapon systems requirements. Begin requirements d fully integrate the suite of simulators/stimulators into a coherent multi-spectral test environment. Continue equipment in support of the F-22's Integrated Hardware-in-the-loop Avionics Test (IHAT) capability.	nunications-Navigation-Identification efinitions and acquisition planning to						
(U)	\$27,610	Total							
(U)	FY 2001 (\$ in Thous	ands)							
(U) (U)	Provide systems engineering/technical assistance (SETA) support for Air Force implementation of the EW Test Process, including improvement and modernization (I&M) of the EW test infrastructure. State of the EW Test Process, including improvement and modernization (I&M) of the EW test infrastructure. EW Test and Evaluation Modeling and Simulation (EW T&E MS). Continue development of verification and validation process for integrated								
		simulations configured to support development and operational testing. Continue correlation process developmentation between EW test facilities being supported by Silver Bullet. Complete AWMS requirementation between EW test facilities being supported by Silver Bullet.	±						
Р	roject 663321	Page 7 of 11 Pages	Exhibit R-2A (PE 0604256F)						

	RDT&	E BUDGET ITEN	1 JUSTIF	ICATION	SHEET (R-2A Ext	nibit)	D	February	y 2000	
	GET ACTIVITY Management a	nd Support			PE NUMBER 0604256		Simulator	- Developme	ent	PROJECT 663321	
(U)	A. Mission Descript	tion Continued									
(U)	FY 2001 (\$ in Thous					_					
(U) (U)	\$1,692 \$6,092	strategy to provide realis NRTF Upgrades. Enhan AFEWES. Continue AF	ce efficiency o	of operations ar	nd accuracy of	measurements		-	•		
(U)	upgrade effort. Complete development of advanced simulator modifications (SAM-C2). Complete development of advanced RF semi-active SAM simulation (SAM-D), and begin development of a second advanced RF semi-active SAM simulation (SAM-F). DIADS. Continue providing mission level simulation for evaluating the survivability of aircraft penetrating an enemy air defense system by updating the IADS scenario with current intel data. Complete verification and validation efforts required to achieve IOC of DIADS baseline. Continue development of external linking and BLUE IADS capabilities, in support of AF, Army, Navy, and non-DoD test customers.										
(U)	\$10,624										
(U)	\$26,687	Total		are in the roof	5 TIVIOMES TES	t (IIIII) capa					
(U)	B. Project Change S	Summary									
(U)	C. Other Program F	Funding Summary (\$ in T FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
(U) (U) (U)	AF RDT&E Other APPN Related RDT&E: PE 0604759F, Major Investment PE 0604940D, Centra	T&E	<u> </u>	<u> </u>	Estimacy	<u> </u>	<u> Dominic</u>	<u> </u>	Complete		
	Investment Program										
	D. Acquisition Strate Contracts funded from	egy m this program are predom	inately awarde	ed on the basis	of full and ope	en competition					
Р	roject 663321			Pag	e 8 of 11 Page	s			Exhibit R-2A (P	E 0604256F)	

	RDT&E BUDGET ITEM JUSTIFICAT		DATE February 2000										
	GET ACTIVITY Management and Support	PE NUMBER AND TITLE 0604256F Threat Simulator Develo								PROJECT 663321			
(U)	E. Schedule Profile		<u>FY</u> 2	1999 3	4	4	<u>FY</u> 2	2000 3			<u>FY 2</u> 2		
(U) (U) (U) (U) (U)	Establish JMASS JPO ECIT Infrastructure and Generic Test Capability (I>C) IOC ECIT SIL Integration ECIT BAF Integration Digital Integrated Air Defense System Baseline Start/Complete	1 *	2	X	4	1 X	2	3	4	1 X	2	3 X	4 X
(U) (U) (U)	AFEWES SAM-C Upgrade AFEWES SAM-D Development Start/ Complete AFEWES SAM-E Dev Complete AFEWES SAM-F Dev Start AFEWES IR Lab Upgrade		ı.				X	X	X	X	X		X
(U)	EW T&E M&S Threat Models Complete BICOMS Radar IOC / FOC RAMS Replacement Radar IOC RAMS Pylon IOC RAMS Pylon FOC		*	*		*	X		X				
Р	roject 663321	Pag	e 9 of 11	Pages					Е	xhibit F	R-2A (PI	E 06042	256F)

RDT&E BUDGET ITEM JU	ISTIFIC	ATION S	SHEET ((R-2A E	xhibit)		DATE	Februa	ry 2000
BUDGET ACTIVITY 06 - Management and Support	PE NUMBER AND TITLE 0604256F Threat Simulator Developme						PROJECT 667500		
COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
667500 Foreign Material Acquisition/Exploitation	0	2,354	6,130	7,030	7,187	7,307	7,499	Continuing	TBD

(U) A. Mission Description

This project is established for the specific purpose of supporting the USAF requirements for Foreign Materiel Program in the acquisition and exploitation of foreign materiel. Items considered for these Foreign Materiel Acquisition and Exploitation (FMA&E) funds are included in the prioritized Air Force Foreign Materiel Acquisition (FMA) list established each year. Each MAJCOM prepares and approves a Foreign Materiel - Mission Need Statement for each requirement. Annually, the MAJCOM commanders establish a list of their top 20 requirements. The MAJCOM's requirements list are then integrated into an Air Force requirement list. Each MAJCOM then approves the AF list and requirements, and final validation comes from the Air Force Vice Chief of Staff. Exploitations are based on and driven by acquisitions. The list is classified secret. The USAF is tasked by OSD to be the DoD Executive Agent for all threat aircraft, air-to-air missiles, and early warning radars. As the Executive Agent, the AF is tasked to acquire, exploit and provide data to all DoD components.

(U) FY 1999 (\$ in Thousands)

(U) \$0 No Activity

(U) \$0 Total

Not applicable.

(U) FY 2000 (\$ in Thousands)

(U) \$1,765 Funds the acquisition of Foreign Materials IAW the prioritized Air Force Foreign Material Acquisition list; subject to assets availability.

(U) \$350 Funds the exploitation of acquired Foreign Materials IAW prioritized lists and specific exploitation plans.

(U) \$239 Funds the operations and maintenance of the specialized Foreign Material assets.

(U) \$2,354 Total

(U) FY 2001 (\$ in Thousands)

(U) \$2,595 Funds the acquisition of Foreign Materials IAW the prioritized Air Force Foreign Material Acquisition list; subject to assets availability.

(U) \$2,957 Funds the exploitation of acquired Foreign Materials IAW prioritized lists and specific exploitation plans.

(U) \$578 Funds the operations and maintenance of the specialized Foreign Material assets.

(U) \$6,130 Total

(U) B. Project Change Summary

Significant Program Changes:

Project 667500 Page 10 of 11 Pages Exhibit R-2A (PE 0604256F)

	RDT&E BU	DGET ITEN	/I JUSTIF	CATION	SHEET (R-2A Exl	hibit)		Febr	uary 200	00
	geт астіvітү - <mark>Management and Su</mark> j	oport			PE NUMBER 0604256		Simulator	Developm	ent		ROJECT 67500
(U)	C. Other Program Funding	Summary (\$ in ' FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to		Total Cost
(U) (U)	AF RDT&E Other APPN None.	Actual	Estillate	Estillate	Lsumate	Lamiate	Laumate	Estillate	Comple	<u></u>	
(U)	D. Acquisition Strategy Not applicable.										
(U)	E. Schedule Profile				<u>FY 1999</u> 2 3			2000 3 4		FY 2001	
(U)	Not applicable. Details are cla	assified and are re	eported throug	1 h other channel		4	1 2	3 4	1	2 3	4
F	Project 667500			Page	11 of 11 Page	S			Exhibit R-2	2A (PE 060	4256F)